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STORAGE

The Public Health Journal

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PRINCIPLES INVOLVED IN NOTIFICATION OF TUBERCULOSIS

P. H. BRYCE.

THE SANITATION OF RAILWAY CARS

THOMAS R. CROWDER.

MATTERS MILITARY

THE STORY OF THE UNION JACK

FLORENCE WITHROW.

THE CAUSATION OF DENTAL DECAY

T. E. CONSTANT.

WAR AND THE INCIDENCE OF INSANITY

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When we cough, or sneeze, or speak aloud, we expel a finely divided and invisible spray into the air in front of the face. It is not carried far; unless borne up by air currents it rapidly settles upon the floor or surrounding objects. But if some one stands near enough to breathe immediately into his lungs our spray-laden expelled air, he may get our disease. When we drink from a cup we leave a little saliva on the rim; another, drinking, may swallow it. Fingers, soiled with urine or feces containing typhoid bacilli, in handling food for another's consumption may transmit typhoid fever. Sputum dried upon the floor may be ground to dust, blown up by the wind, and enter the lungs of him who breathes the air.

From all of which it is apparent that infection in occupied places may be contracted in three ways—1, by direct transmission from person to person through the agency of mouth spray and intimate personal contact; 2, by indirect transmission through food and drink and from the common use of utensils or other facilities for comfort and convenience; and, 3, from infected premises. So far as railway cars are concerned, the first of these is the most important. With the exception of a few diseases which are generally conveyed through food and drink, such as typhoid fever, the accumulating evidence of recent years is making it more and more clear that the majority of transmissible infections are passed with relative directness from person to person. We are coming to understand that people, and not things, are the chief agents of disease transmission as well as the sources of infection; that the thing that counts is the actual presence of the infected person.

Applying this brief statement of principles to the subject under discussion, it becomes obvious that the first and foremost necessity in protecting those who travel is to keep out of cars all people who are known to be infected with communicable diseases. I do not need to point out the difficulties which confront the railroads in attempting to do this. Under their legal obligation to furnish transportation they have little power to discriminate among those who apply for it. It is not possible to refuse accommodation except under certain well-defined conditions, which, in so far as the communicable diseases are concerned, must include a definite diagnosis, and this the railroads are not, and can not be, prepared to make. Since, in the nature of things, the infected person is the one most likely to be informed, the proper remedy would seem to lie in legislation placing the responsibility on the passengers themselves and making it illegal for those afflicted with communicable diseases to ask for or to accept transportation from common carriers.

Such legislation has been passed in one form or another in some 28 States, but there has been little attempt to enforce its provisions or to make them generally known. In addition to these State laws, there has just been issued by the Federal Government a revision of the Interstate Quarantine Regulations, which denies absolutely to all persons having the more dangerous and readily transmitted infectious diseases the right to enter public conveyances, and which on all those with infections that are less readily transferred puts such restrictions as will render them without danger to other travelers. The regulations are so designed as to protect the railways in their refusal to carry people with transmissible diseases and to place upon the traveler the responsibility of declaring his condition. This is as it should be. But the railways may help, and should help, to make the regulations effective by willing compliance when their case is clear, and by insisting that their patrons also comply with those sections which relate to them.

To the extent that these regulations can prevent the dangerously infected from travelling, they will protect the public health. But, unfortunately, the infected person can not always be identified. Only pronounced disease is commonly recognized on brief inspection, and infection does not always cause pronounced disease. One may be infected with the virulent germs of a disease and yet not be sick of it, or his illness may be no more than a slight indisposition, the real nature of which he does not even suspect. Many people are so afflicted. A mild sore throat may be diphtheria; a trifling rash may be

smallpox, measles, or scarlet fever; a little cough which scarcely discommodes the patient may throw myriads of tubercle bacilli into the surrounding air. Even typhoid fever, generally a serious and prolonged disease, does not always bring its victim to his bed. There are people also who, for months or years after recovery, harbor the bacteria of an infection from which they have previously suffered, and who remain entirely well while they constantly spread their virulent germs about them.

From these mild cases, and from these infected well who are known as "carriers," severe cases may be acquired by those who are more susceptible. It follows, therefore, that regulations segregating the known cases of communicable diseases from cars is only a partial protection to the well; and, while the actually sick are the more important element in spreading the acute infections, some chances must always be taken from those whose disease is not apparent. Until each passenger has grasped, and has applied for his own and his fellows' protection, the idea of nonpromiscuity in his personal relations and in the disposal of his body's products, there can be little improvement in this feature of public assemblage. It is simply a question of applying the golden rule: Refrain from sneezing in your neighbor's face. Each one must learn to keep his own secretions to himself and each to avoid the secretions of others. And he who knows himself to be a source of danger should be doubly careful. The world is sadly in need of education along this line.

One of the most serious communicable diseases to which travelers are exposed is pulmonary tuberculosis. While it may be contracted in various ways, direct transmission through the medium of mouth spray is probably one of the most frequent and important. Although its prevalence and destructiveness are appalling, public sentiment will not approve of limiting greatly the movements of its victims. The railroads can not deny them transportation as dangerous passengers while they are permitted the freedom of all other places, public and private. It would undoubtedly be a valuable public-health measure to restrict the freedom of the tuberculous; but their number is so great, their disease is so chronic in its course and leaves them so long in comparative health and comfort that segregation is entirely impractical. The almost universal belief that changes of climate may hasten their recovery keeps them travelling in search of health.

We are all undoubtedly exposed to this widespread infection many times in our lives. Childhood is believed to be the period of greatest susceptibility to infection. Necropsy records are said to show that nearly all adults have actually been infected at some time, so that the little more exposure involved in the health-seeker's travel is probably of no great consequence. It is an infection which seems to be slowly acquired by intimate contact and by long exposure, and the time of exposure in railway cars is neither long nor necessarily close. Careful habits in disposing of mouth secretions and in protecting the air from mouth spray can so nearly overcome the danger that it practically disappears. The new Interstate Quarantine Code recognizes this and permits the tuberculous to occupy cars, but it prescribes that they must be provided with and must use the means of preventing contamination of their surroundings. The railways can improve their sanitary efficiency and aid in protecting their patrons by enforcing the regulation.

It is often proposed that special cars should be furnished for the diseased, especially for the tuberculous. Leaving aside the serious economic difficulty, it would be impossible to get more than a small proportion of the tuberculous into such special cars. It is not the bed-ridden consumptive who presents the greatest danger of infecting his associates. Him we can identify and control. Far more important is the patient, either unsuspected or showing no conclusive evidence of his disease, who travels as a healthy individual, for of this class there are many more going about the world than of those severely sick. So the question remains not so much one of who shall use the car as of the habits of those who use it.

In this connection I scarcely need to

allude to the duty of the railroads to furnish healthy crews for trains and to prevent overcrowding of cars. While the latter evil is largely confined to suburban traffic, the long-run day coach is not always free from blame. When they have done these things, and have done all they can to keep communicable diseases out of their cars, the railways have discharged their duty in relation to the direct transmission of disease. But what may they do to prevent its indirect transmission by reason of the common use of facilities for comfort and convenience?

While pathogenic organisms are mainly parasitic, growing only in the body of a host, they may remain viable for a considerable time outside the body and produce disease if they gain entrance. The contraction of disease by infection is so largely a matter of individual resistance and susceptibility that it is impossible to generalize about it. The number of organisms which in one person produce a disease may be quite innocuous to another. As with poisons, there is always a dose too small to do damage; so that absolute sterility of the things we use, even freedom from pathogenic organisms, is not necessary for the great majority to escape infection. But contamination of the things we use is always potentially dangerous, and it is right that the railroad should be required to provide facilities whereby the use of contaminated things may be avoided and its passengers may carry out to the utmost their own protection.

One of the things through which disease is most readily transmitted by the indirect route is the common drinking cup. Infected lips leave bacteria on the rim, and other lips pick them up. Ten years ago the common cup was universal on railway trains; now it is a thing of the past. Thanks to the initial temerity of Kansas in 1907, a reform was started which has now become complete. The common towel was another very real evil. It has gone the way of the cup. The comb and brush, while less important, should be induced to make a similar exit.

Ample provision should be made in all railway cars for travellers to keep their hands and faces clean. Lavatories should be conveniently located, supplied with an abundance of water, well drained and trapped, and should have smooth surfaces for easy cleaning. Towels should be constantly at hand and in sufficient quantity for individual use. There should be a place for brushing the teeth—a dental lavatory—in all cars which make long journeys. Using a wash basin for this purpose is to make a cuspidor of it.

Toilets should be always available, well flushed, perfectly emptying, and capable of easy cleaning. The old type of open hopper, with its up draft of wind and dust and its nearly constant fouling, is disagreeable, and passengers avoid its use, to the detriment of health. Cuspidors should be provided that spitting may not become an insanitary nuisance. Though it is often insisted upon by laws and regulations, the disinfection of cuspidors and toilets is largely aesthetic and sentimental. What goes into them is not touched, can not fly into the air, and has gone where it will not do harm; and unless it becomes a nuisance to sight or smell, our attention should be directed rather to discharges which fail to reach their proper place of disposal. The fallacious drip machine—the so-called continuous toilet disinfector—should be mentioned only to be condemned. It does not disinfect; it only distils an odor, sometimes worse than the one it tries to hide, and diverts attention from conditions that need mending.

Day coaches should have cans for garbage and refuse. Not that garbage and refuse carry infectious diseases—that is another of the fallacies of popular thought—but particles of food and other rubbish may be picked up from dirty floors by children or taken by them from a cuspidor in the mouth of which it lodges.

An ample supply of pure and wholesome drinking water is always necessary. It should be supplied and stored in such a way that it can not readily be contaminated by passengers. Ice that goes into the water should also be pure and clean, and must not be handled with bare hands which may be the carriers of excretions and disease. Better yet, ice should not go into the water at all, but into a separate compartment of the cooler, as is now required by some of the States and

is being carried out by numerous corporations regardless of regulation.

In the dining car we meet the most important of the problems of indirect transmission of the disease. Many of the infections may be contracted through the medium of food and drink, and some of them, as typhoid fever, are commonly transmitted in this way. Cleanliness in the preparation and handling of food is therefore all important to the public health. Especially milk and cream and vegetables to be eaten raw must be produced and stored in such a way as to avoid contamination. But more important still is the supervision of the health of dining-car employees to the end that those harboring transmissible infections may be excluded from the service. Periodic examination of cooks and waiters should be made at frequent intervals, certainly not longer than quarterly or half yearly, and those found infected with tuberculosis, venereal diseases, typhoid fever, diphtheria, etc., should be dismissed until complete recovery has taken place.

The typhoid "carrier" is an especially dangerous person in the kitchen. Numerous small epidemics of the disease have had such a starting place, the infection being carried to food in course of preparation by hands contaminated with human discharges. Every dining car should have a lavatory for the crew, and the most rigid supervision should be instituted to see that it is always patronized and that the nails are properly manicured before beginning service. Some railroads now provide for this examination and supervision. It is only a question of time when all will be compelled to do so, and perhaps also to inoculate their dining-car crews against typhoid.

The sources of food supplies should be chosen on the basis of the purity of their products, and the food should be handled in such a manner that it can not become contaminated with human excretions. It must be protected from flies, which breed in filth, feed on filth, and deposit filth where they alight. No argument can excuse their presence in the dining room, nor on food in process of preparation or transfer to the cars.

There has been much comment during the last few years on the use of the finger bowl, with proposals here and there to abolish it entirely. The harm it does is problematic; I believe it is insignificant and practically negligible; but the care of drinking glasses and of eating utensils is of genuine importance. They should pass through boiling water before they are served to patrons.

There has occasionally been severe criticism of those railroads which allow their crews to sleep in dining cars. The practice is undesirable from an operating standpoint, but under some conditions it is almost unavoidable, and I can not see that it does any harm from the hygienic standpoint.

When we come to consider hangings, linen and bedding, floors, carpets and upholstery, and their possible relation to the health of travelers, we are brought to a discussion of the third method of possible infection in railway travel, namely, by the car itself being infected in such a way as to be dangerous to its occupants. This is dealing simply with a new phase of the question of indirect transmission of disease—indirect transmission from previous passengers or from extraneous sources through the medium of infected premises.

Very little experimental work has been done on the bacteriology of the railway coach. The best was carried out by Kinyoun many years ago. He found various pathogenic organisms in the dust from the floors and furnishings of cars, but only a few of them retained their virulence, and these in slight degree. Since all human beings are to a certain degree infected the places they occupy are also infected to some extent, and Kinyoun's results are only what might have been expected; they are the common findings of all inhabited places. They have been amply confirmed for other habitations and go to support my earlier contention that cars and houses lie in the same hygienic category and are subject to the same sanitary laws.

Though we must expect most cars to contain pathogenic bacteria in greater or more lesser numbers, their presence is no proof of a dangerous degree or infection. Much evidence has been accumulated in recent years which seems to show that the places vacated by the sick are without danger

to the well unless very gross contamination has occurred and no adequate precautions have been taken to destroy it. In order to acquire an infectious disease we must receive organisms in sufficient quantity and of sufficient degree of virulence, and neither the quantity nor the virulence is liable to be great enough in cars to transmit a disease to their occupants.

It is nevertheless desirable that the railroads should take precautions to keep car infection down to a minimum. This may be done in two ways: By mechanical cleaning, which removes the bacteria; or by fumigation, which kills them. Of the two methods, the former is much the more important. Mechanical cleaning will not remove all the bacteria, for it can not remove the last particle of dust or dirt in which they are contained; but if it is well done, not enough will remain to be of any danger to passengers who use the car.

The method used in the cleaning of cars is of less importance than the effect produced, which must be reasonable cleanliness in all instances. For bare floors, toilets, woodwork, and utensils, soap, water, and elbow work are the important ingredients which must enter into the process. For dislodging dust from corners and angles, an air blast is both rapid and efficient. For removing it from carpets and fabrics, the vacuum process is best; it not only removes the dust, but collects it for final and quick disposal. But vacuum cleaning without sufficient power is a makeshift. It requires at least the equivalent of 1 horsepower, with not more than 50 feet of hose, to operate a single sweeper effectively. Some two years ago, as a member of a committee to investigate car cleaning, I went through this subject in an experimental way. In the beginning of the investigation there was no vacuum machine on the market which was well adapted to the work in car-cleaning yards, but one was soon developed which not only does better cleaning than the older compressed air process but also does it cheaper, as has been amply verified by two years of practical application.

Ten years ago there was an epidemic of regulations requiring the fumigation of cars at frequent periodic intervals. If properly carried out, there is no doubt that fumigation will kill the vast majority of the bacteria in a car. But it is a procedure which has been much overworked in the past and which is not a proper substitute for thorough mechanical cleaning. Good cleaning is necessary in any event; and after it has been done not enough bacteria will remain to be of any real hygienic significance. In recognition of this fact the movement for periodic fumigation is now dying out. The tendency is rather to require it only after serious infectious diseases are known to have been carried, as is done by the new Interstate Quarantine Code. No reasonable objection can be made to that demand, and, even though the good it does is questionable, the roads should adopt the plan as a part of their own regulations.

In addition to providing for the sanitary arrangements outlined above, the roads have another duty in relation to the infectious diseases, and that is to instruct their employees in the principles that govern the protection of public health, to make rules for their sanitary guidance, and to see that these are obeyed. Instruction in this regard I look upon as important. I believe it can be made very useful in railway sanitary work. Some two years ago I prepared for the instruction of Pullman employees a little pamphlet in which I attempted to show, by means of a brief and simple statement of the origin of infectious diseases and the modes of their transmission, the reason for the existence of certain rules with which employees must comply, in the belief that better compliance will be obtained when the reason is understood. While the pamphlet deals with a few things beside the infectious diseases, such as heating and ventilation, it concerns those diseases chiefly, and attempts to state in simple language what influence the actions of employees may have in aiding or preventing their indirect transmission. The rules are only such as ought to apply in all railway service. They prohibit dry sweeping, dusting and brushing, and the use of the common cup, they refer to the care of ice and water, to the cleaning of cuspidors, basins, and hoppers, and to the use of disinfectants and fumigation.

The miscellaneous influence constitut-

ing the third group of the dangers of railway travel, as I have outlined them, affect the health of car occupants only indirectly. They tend to reduce resistance rather than to produce disease directly. Certain individuals have peculiar susceptibilities of the nervous system rendering them liable to attacks of car sickness during any extended journey. There are people, too, who almost invariably have attacks of migraine, or sick headache, under similar conditions. It is not possible to prevent these results in the predisposed, though smooth roadbeds and comfortable cars probably tend to lessen the liability of their occurrence.

In the planning of railway cars too little attention has been given to the shape of the seats. The ordinary car seat is not supremely comfortable, and the nervous strain of riding all day long on an uncomfortable seat can not be disregarded. The seat should be so shaped as to conform to the curve of the back, which it usually is not; it should be at the proper distance from the floor—many are now too high; it should extend high enough to support the head; and a foot rest in front adds greatly to its fitness for its intended purpose.

The lighting of cars at night would not seem to be a difficult task, and yet, with the exception of dining cars, which, for aesthetic reasons, have received the most attention, properly lighted cars are rare. The light should be evenly distributed, and so placed that it will not shine in the eyes with a direct glare. If exposed lamps are used they should be placed as high as possible; if placed low down they should be shaded or have opal or frosted globes. The low ceiling of the coach would seem to lend itself readily to the indirect or semidirect system of lighting, which is a nearer approach to the ideal.

Ventilation is an always vital sanitary problem. Good air is of prime importance to good health. Ten or twelve years ago attempts to supply good air to railway cars were generally failures. The problem seemed complicated and almost hopeless. It still has its difficult points, but thanks to the enlightening research of the last 10 years it is now much simplified. We have learned what good air is: It is air that bears a proper thermic relation to the body. It must be able to absorb the body heat as rapidly as formed, without being cold enough to produce discomfort. It must be warm, but not too warm; it must have motion, but not enough to cause a chilling draft; it must be changed constantly to prevent stagnation and overheating. When these conditions, which are purely physical, are complied with, practically all other things may be left out of consideration. The chemical changes brought about by respiration are ordinarily negligible.

Due to the high wind pressure to which running trains are constantly subjected, a surprising amount of air enters them even when no special provision is made for it. I believe the quantity can always be kept adequate by the application of a simple exhaust system, as is now done on many lines. A much more difficult problem than maintaining the air supply is the proper control of heat. If the temperature is carefully regulated to between 65 degrees and 70 degrees F. complaint of poor ventilation will rarely arise, even with impure air and a very small supply, but above 70 degrees trouble comes quickly and we think there is not enough air being supplied to keep our lungs flushed out. That is not the trouble at all, for let the temperature drop to the lower sixties and the air supply remain the same and we think the amount too large. The income and the outgo of air create motion within the car. When the temperature is too high we need more motion, hence a larger air supply, to keep the body cool; when it is too low we need less motion, or a smaller air supply, to keep the body warm. The lungs and the function of respiration have nothing to do with this; it is entirely a surface function. The practical problem of ventilation is thus seen to be one of physics, not one of chemistry. Its purpose is not so much to supply pure air as to supply air that will maintain the body's thermic balance through acting on its surface. Therein lies the reason that a fan can often be made to serve as good a purpose as an increased air supply.

With a simple exhaust system of ventilation, specific air inlets are not necessary unless cars are greatly crowded. Natural

crevices, to which may be added open sashes in the end doors, will be sufficient. For supplying artificial heat, direct radiation is better than indirect. Little cold streams of incoming air, mixing with the warmer and stiller body of air within, contribute the stimulating variaton of surface environment which is so necessary to comfort and health. Only when large quantities of cold air are admitted at one place is heating of the incoming stream desirable, and this is not a good plan for ventilating railway cars. When no artificial heat is needed, as in the warm summer months, nothing can take the place of open windows, for large streams of rapidly moving air are necessary to maintain the thermic balance of the body.

A certain amount of dust, smoke, and engine gases inevitably enter cars. This is, of course, liable to great variation. Smoke and gases are never really troublesome except in passing through tunnels, when they produce no more than temporary discomfort. I have examined many specimens of tunnel air and have found the gases of combustion always far below the point of danger.

Ordinary dust is of more importance because it is more prevalent and because it is possibly infectious. If not infectious it is at least irritating and uncomfortable, and prolonged breathing of a heavily dust-laden atmosphere predisposes to infections of the respiratory tract. Its sources from within the car should be limited by good cleaning, and by the prohibition of dry dusting, brushing, and sweeping while are car is occupied. When cleaning is well done and disturbance of car furnishings is avoided, carpets and plush are better than bare floors and smooth upholstery because they hold the dust that settles on them and prevent its redistribution.

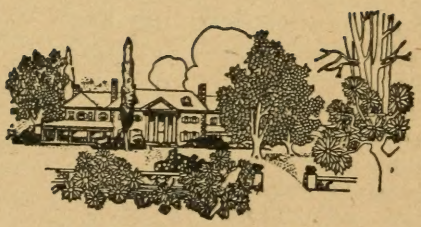
The chief source of dust, and the only one of any real importance, is the roadbed. In hot, dry weather, when cars must be run with open windows, it is often troublesome. The best and about the only way to combat it successfully is by sprinkling the tracks with oil. This is now done on some lines where crude petroleum is plentiful and cheap.

The discussion of roadbed dust brings us to the one feature of the sanitation of railway cars which is entirely distinctive—which is unique from the very fact that the car is a mobile house—and which is strictly a railway problem. I refer to the disposal of sewage and to the subject of track pollution by human excretions. The problem of sewage disposal does not take on the same form in any other place, and certainly the method of solution on the railway can not be the same as that which is ordinarily applied to stable habitations. Sewage from car toilets must either be dropped on the surface of the tracks or it must be received into some portable container.

As yet we do not know the whole hygienic significance of track pollution. It should be studied with care. Two things may conceivably bring danger—either discharges may be washed from the tracks into bodies of water which are used for domestic supply, or they may dry, become pulverized, be blown up as dust by the wind or passing trains, scattered to the neighborhood, or blown into passing cars. Our knowledge is now sufficient to assure us that the first of these dangers is real, and that where track drainage is into domestic reservoirs the protection of the reservoirs is demanded. While it is well known that bacteria are rapidly destroyed in running streams, the drainage from tracks may be much too direct for such action to take place, and where reservoirs are near the lines the drainage must be so arranged that contamination of the water supply will not occur.

It is by no means clear, however, that there is any danger of infection from roadbed dust, and against its probability stand several important facts. Railway tracks are almost universally exposed to sunlight, and sunlight is inimical to bacteria; it soon destroys the disease-producing kinds. Drying is also harmful to bacteria, though in a less degree. But drying and pulverization take time, which allows the natural destructive forces to act. By the time that sewage has dried on the tracks, become reduced to dust, and carried into the air in a finely divided state it is highly improbable that it can still contain pathogenic organisms in a virulent condition. It was shown by the investigations of Kinyoun,

already referred to, that the dust outside of railway trains contains much fewer bacteria than that from within the cars. The evil would seem to lie in the dust as such—in the irritation caused by the breathing of pulverized earth, rock and cinder—and not in the bacteria it contains. The discharge from car toilets can have no appreciable effect on its gross amount in the air about moving trains. It is comparable to the dust of streets, though it is produced more slowly and contains less organic matter. While the direct evidence is still not entirely clear, it seems to me that it may be quite right to believe that where domestic water supplies are not concerned track pollution is of little or no hygienic importance, and that when all the facts are known the many extravagant statements that have been made about it will find their proper level near the zero mark of sanitary significance.



would undoubt...

The Great Consulting Room of a Wise Man is a Library—Dawson

RELATIVE VALUES IN PUBLIC HEALTH WORK. By Franz Schneider, Jr., New York: Department of Surveys and Exhibits, Russell Sage Foundation.

Not how many dollars to spend but how to spend the dollars you have for public health activities is the subject of a recently issued pamphlet on "Relative Values in Public Health Work." The author is Franz Schneider, Jr., sanitarian of the Department of Surveys and Exhibits, Russell Sage Foundation, who has conducted public health surveys of Newark, Springfield, Ill., Topeka, Atlanta, and other cities.

Given some 1,400,000 deaths annually in continental United States, of which one in four or even one in three are from preventable causes, the problem of the public health officer is to so spend the city's health funds as to prevent these losses so far as is possible. The health officials "must decide what parts of the losses are preventable, and must determine how the greatest return in prevention can be obtained with the money available. This is the problem of relative values in public health work."

The actual situation confronting American health officers is that "with the scanty funds now at their disposal, and the great variation in effectiveness of different activities, the most careful discrimination must be exercised in making up the department's program. A bad distribution of funds means lives lost, and the responsibility, a heavy one, falls on the administrative official." The author quotes Professor George C. Whipple as saying, "this is one of the greatest question that a sanitarian can consider. It is to-day the most important of all hygienic problems because it comprehends all others."

The discussion cannot well be condensed from the already concise presentation in this ten-page pamphlet. It is offered as a basis for the discussion of health budgets by officials and citizens who seek the highest returns on the city's investment in terms of deaths prevented. Among the tests applied are the damage done by the preventable diseases, their preventability, cost of prevention, and communicability—small pox, for example, "must be suppressed immediately upon appearance, almost without regard to cost."

Social workers as well as heavy tax payers and all other citizens will be aided by this pamphlet in studying local health expenditures.

MATTERS MILITARY

"SOME HOLE" IN FRANCE

C. G. Sutherland, Captain 102nd Field Ambulance, France.

Oct. 25th, 1916.

NECESSITY is said to be the mother of invention and this war is filled with necessities.

We have just finished trying to make a home out of what in the piping days of peace was evidently a storeroom up over a garage.

Our main dressing station is just now situated in the once-was garage of a rather, one would judge, well-to-do brewer.

The story goes that when the Huns passed through this country in the early days of the war they took two or four automobiles and six carriage horses from this place as souvenirs of their visit.

One room with a yellow tile floor and a sunken pit nicely covered in with thick planks all neatly numbered by figures cut in the wood served as an office.

The next larger room as a ward for mild surgical cases.

A third room serves as a receiving room for sick and an examining room.

A large room leading from this last room with a very pretty patterned tile floor and generously furnished in shelves and cupboards serves as a dispensary and storeroom for dressings and surgical appliances.

On one side of the court a small building that suggests a series of four elaborately constructed dog kennels has been fitted as a pack store where the kits of the sick and wounded are checked and stored.

Next to this a series of five carriage shelters have been closed in to make a dining and recreation room for the men. Two brick fireplaces have been built and the place whitewashed and brightened up.

Two on the other side of a passageway have been converted into a cook kitchen, another into sleeping quarters for the sergeants, and the last one into a quartermaster's clothing store.

Two wooden huts have been built in the court in front of these latter buildings and these serve as a quartermaster's food store and a sergeants' mess. Under a galvanized iron shelter next to these buildings is the cook house with a series of brick trench fires cemented to fit the kettles, a mud oven, and three large water boilers with fires under them.

On the end of the court, what has probably been a wagon house for the large brewery drays has been fitted with a long series of ablution benches where the men wash and shave, and curtained off in one corner is a large tin bath for the use of the men.

Hot water is always obtainable from the exhaust of the boilers in the brewery so the men have every facility for keeping clean.

Two long semi-basement rooms with tiled floors and a tiled wainscotting running up about two feet on the wall serve as a ward for the medical cases.

These rooms are heated by steam from the brewery, which is still in operation,

making excellent wards with a capacity of about forty.

The room available for an officers' mess was about the poorest room in the series.

It was up a small flight of stairs at one end of the main building.

With one window in which most of the panes were broken, dirty brick walls and a cement floor with several large holes in it it was about as impossible a place for a home for perhaps several months as one could imagine.

The inevitable coat of whitewash was the first thing that this room received. Our men are becoming quite expert whitewashers from long experience. We have had to use it liberally on every place we have been in yet.

The floors were patched with cement, the windows were replaced or the holes covered with old tin biscuit box scraps.

A fire-place was built by two of the personnel of the ambulance.

One was a miner in civil life and the other a clerk in a small store but with straightened out horse shoes for grate bars and some old brick that had been drawn from a dilapidated city a little nearer the front line for road making they managed to make a very presentable fire-place.

It was a little shy on pipe for the first few days, having only the three odd feet that carried the smoke to the outer side of the wall, and as a result the draught was so poor that every time fresh coal was put on the room was filled with smoke and all the windows and doors had to be left open for the best part of the hour.

During those days the benefit of the fire was largely pyschological. Further lengths of pipe were secured and now they fire-place is all that one could ask it to be.

Some time ago one of our officers came back from a visit to one of the Flying Corps messes with a description of a method of decorating the walls of the mess that he had seen there. Pictures were cut out of the illustrated periodicals such as Sketch, Tatler, Bystander, and La Vie Parisienne and pasted on black cloth which had been tacked on the wall.

I have spent many a spare hour since cutting out the pictures with a safety razor blade and now have three of the bare brick walls covered.

In moving one has just to remove a few tacks, roll the gallery up and in the same time the gallery is put up in the new place.

Just the figures are cut out when pasted on the cloth gives a result that looks not unlike a tapestry.

Our gallery has been much commented on and assists greatly in adding something of a homelike appearance to some very bare places.

Our predecessors had done very well in the line of commandeering furniture. We have a large fibre rug in the centre of the room, a good sized table and a liberal supply of chairs.

A new blanket serves as an excellent day cloth for the table and at meal times we have white table cloths over this.

While officially known as a mobile unit we usually remain from two to three months in the one place so have a set of table-ware quite up to the standard of the ordinary home.

Meats, vegetables, and sometimes even poultry are obtainable right in the villages. We also have an Expeditionary Force canteen in our village. We have a gramophone and are nearly always within reach of a city where we can purchase the very latest thing in records. The French shops stock all the latest English records.

Life is very much what one makes it out here and our experience of nearly a year in the forward area has taught us much in the art of homemaking.

The unfortunate thing is that just as one gets a place to the stage where it is comparatively comfortable the order comes to move and the greater part of the work has to be commenced all over again.

We would all be glad to get the order to move "home" but we do not look for that for at least a time yet.

THE WAR DOCTORS—THEIR LIFE UNDER FIRE

Somewhere in France.

AMONG the first forces mobilized by the Germans at the end of July, 1914, were the cinematographers and the artists. The German Empire has therefore a complete pictorial record of the war from its earliest days. We have lately begun to use the cinematograph. But we have not yet begun to enshrine by color and canvas the lives of our men, and when we do send out a dozen of our best painters the war doctor must be among the first to be made known and perpetuated.

We are so accustomed to consider doctors as part of our daily lives, or as workers in speckless and palatial hospitals, that we have hardly yet visualized the man who shares the hell of the front trench with the fighters, armed only with two panniers of urgent drugs, instruments and field dressings, his acetylene lamp and electric torch. Most of us think of his war work as being accomplished at one of the great healing places at the base.

If there be degrees of chivalry, the highest award should be accorded to the medical profession, which at once forsook its lucrative practices in London, or Melbourne, or Montreal, in a great rally of self-sacrifice. The figures of the casualties among them bring home, to those who have only the big hospital idea of the war doctor, sad facts that should lead to due understanding of this not sufficiently known veritable body of Knights Templars in the Great Crusade. For the last three months in the Royal Army Medical Corps alone, I account them according to the figures published in The Times from day to day:

Officers killed	53
Officers wounded	208
Officers missing	4

Non-commissioned Officers and Men (R.A.M.C. only)

Killed	260
Wounded	1,212
Missing	3

I propose to set down the order in which our medical service arranges its chain of responsibility, premising my account by the statement that the medical army of to-day exceeds numerically the whole British military forces overseas before the outbreak of war.

It is a little difficult and complex to explain. I find that there is some confusion in the public mind as to the regimental work, that of the Royal Army Medical Corps and their hand-maidens, the British Red Cross Society and Order of St. John. But there is no confusion or overlapping in the zone of hostilities.

In the preparations for the great Battle of the Somme, Sir Douglas Haig, thorough in this as in every other detail, himself cooperated with the medical services in arranging his regimental aid posts, his casualty clearing stations, and the rest of them as systematically as his batteries, his ammunition "dumps," and his reserves.

First in the order of danger is the regimental aid post, where the regimental doctor, with his stretcher-bearers, awaits, alongside the men who are to clamber "over the top," the bloody fruits of battle. In the early days of the war, before we had discovered the secret, or had the means, to blast our road into Germany by ceaseless shells, the regimental aid post was, as a rule, in some deserted farmhouse as near to the front trench as possible. To-day, as we advance, our guns leave nothing standing, so that what was once perhaps a chateau is now only a stretch of rubble. There is, therefore, but little available cover for the doctors or the others before "consolidation."

The intensity of the French and German artillery at Verdun in March seemed to me then the limit of human capacity to produce noise and destruction. But the Somme bombardment actually furrows or flattens all before it. Verdun itself could not exist a week if exposed to the present French and British cannonade. Its intensity of sound is so great that at times the very earth shakes beneath one's feet.

The doctor has to-day, probably, only the shelter of one of our own trenches or

any little part that may remain of a captured German trench. There is no other covering for him and his brave stretcher-bearers, who are at once his nurses and his orderlies. Happily, not so many of these are fired upon by the enemy as heretofore; for, as the Prussians have realized that our artillery is the most deadly thing in the history of war, they have become a good deal more reasonable and human. Now that their own wounded greatly outnumber ours on almost every occasion, their doctors and stretcher-bearers often advance with a sheet or towel held high on a rifle as a flag of truce in order that they may collect their wounded and we ours. In the early days of the war similar suggestions on our part were haughtily and contemptuously refused. And so the advanced medical forces on both sides are at last sparing the wounded a good deal of the drawn-out horrors of "No Man's Land."

The fine young men with the English, Scotch, Irish, Canadian, and Australian accents who stand unarmed in these regimental aid posts, work with an intensity and celerity which eclipse even that of the surgeons in London's operating theaters.

The stretcher-bearers stagger in with their load. There is a lightning diagnosis, an antiseptic application, bandaging, a hastily written label tied to the man's breast, and the wounded one is borne off and away in the open to the next stage, the advanced dressing station, which is as often as not also pushed right up into the fire zone. The regimental stretcher-bearers therefore begin again another dangerous pilgrimage rearwards.

As there is much ignorance in the public mind on the subject of casualties, it should be well realized that by far the greater proportion of our wounded are slightly hit, and are "walking cases," so little hurt that in innumerable instances where the stretcher-bearers themselves have fallen they have been carried by the slightly wounded soldiers.

I know no more moving experience than an afternoon in an advanced dressing station. Let me describe that of West Peronne. Its location is changed now, so I am giving the enemy no information. We reached it on a heavy and sultry Sunday afternoon by hiding ourselves behind anything possible. Dust and smoke gave the atmosphere of a coming thunderstorm; the thudding of the guns on both sides was incessant. Now and then was heard the brisk note of a machine-gun, which sounds for all the world like a boy rasping a stick along palings or the rattle which the policemen carried in mid-Victorian days.

There was no sign of anything in the nature of a hospital, a tent, or of anything above ground. I was getting somewhat weary of being told to lie down flat every few seconds to avoid bursting shells, when I saw a couple of stretcher-bearers coming through the haze as from nowhere and then disappear underground. "It is underneath there," I was told by my guide, whose daily duty it was to inspect these medical outposts.

As quickly as possible we got down into a trench and followed the stretcher-bearers. There in darkness, lit by a few candles, we gradually made out a very grim scene. Talking was difficult, for one of our batteries had just come into action a few yards away.

Owing to the heavy enemy shell fire, what I soon found to be an underground maze had become completely blocked with wounded men lying in the dark on their stretchers, the passageways dug out of the clayish earth being just the width of a stretcher handle and no more. We trod gently from stretcher handle to stretcher handle over the silent men, some of them asleep with the blessed morphia in their brains, other cheerily smiling, others staring as wounded men do. All who could move a hand had a cigarette—now admitted to be the first need of all but the very dangerously wounded.

Passing on, and using our electric torch as little as possible so as not to disturb the sleepers, we came to the main dressing room. Remember it was all underground, all dark, and that the on-coming wail of approaching shells, with immediate subsequent explosions, was continuous.

In this main dressing room the doctors, all young men, some of them subalterns of the R.A.M.C., were washing and bandaging with the care and speed that can

be seen in the Somme film. I counted twenty-four patients in that small chamber. We crept onward and came to another room where there were nine cases, and again to a smaller one where lay the more dangerously wounded.

These dressing rooms were protected by some 4 or 5 feet of earth above them. There was a small officer's mess and a medical stor eroom which were merely shielded by corrugated iron from shrapnel splinters, a kitchen, an office, and that was about all. An operation for tracheotome was taking place in one of the dressing rooms.

In all my many experiences abroad, I have never seen a more touching sight than this little underground gathering of some seventy men, devoted doctors and assistants, waiting amidst the incessant shelling until the overcrowded maze could be evacuated. Let those who take their ease on a Sunday afternoon, or any other afternoon, realize that this same scene never ceases. Let those who consider they are amply doing their "bit" by keeping things going at home be grateful that their "bit" is not as these young men's. We cannot all of us share the danger, but we can every one of us admit the harsh inequalities of our respective war work.

One or two of the patients were shell-shock victims, and it was piteous to note their tremor at the approaching shell wails and subsequent thuds just outside our little catacomb.

The shelling increased in intensity. It became obvious that we had to remain concealed till the storm had stopped. In the interval we discussed things about wounded men. We learned that quite a considerable proportion of them had dressed their own wounds with the little first field dressing that is sewn into the tunic of every soldier. Others had got along well enough with the medical help of regimental stretcher-bearers. The rest had been tended at the regimental aid posts to which I referred.

Presently the Germans diverted the attention of their gunners to another point of the line, so we were able to emerge into daylight once more and join a small company of lightly wounded and stretcher-bearers on their way to a walking wounded collecting station. I name all these distinct stages in the progress of the wounded man in order to show how carefully the system has been thought out and organized. It is a tribute to the foresight of our medical authorities that all this vast scheme had been arranged before the war.

On our way rearwards to the walking wounded collecting station we were passed by some horse-ambulances which, summoned by telephone, were proceeding to the underground hospital we had just left. On our way we escaped the only enemy aeroplane attack that came to my notice during this visit to the front. An officer and a few men were wounded. It speaks eloquently for the celerity with which our casualties are cleared, when I tell you that on that same evning, many miles away in the rear, I saw this particular wounded officer sitting in bed nonchalantly enjoying his dinner. By the next day, I was told, he would probably be in England.

The walking wounded collecting station consisted of marquees in which a considerable number of Tommies of all dialects were partaking of a hearty meal. As each arrived, his name and regimental number were entered, with particulars of his case. Where necessary, his dressings were rearranged, and in every case a cigarette was offered. Prodigious quantities of tea, cocoa, soup, bread, butter and jam were disappearing. Despite the bandaged heads and arms of some and the limping of others, they were a merry, if tired party. Eagerly and in vigorous and unprintable Anglo-Saxon one of them said: "I want to have another smack at the —— Allemans." In a tent was a wounded officer, famous in the world of big game (scarred as the result of a miraculous escape from an African elephant), who, though covered with blood, had only one anxiety, and that was to have his wound dressed, get a bath, and return to his men in time for the next "stunt"—to use an abominable Americanism which has grown weed-like into our war language. Two days before, this walking wounded collecting station had been shelled by the enemy. By a strange stroke of fortune the only victims were a large

number of German prisoners.

Life is held gaily and cheaply in these advanced hospitals. There was a small underground chamber here, fitted with bunks as on shipboard, in which the officers could sleep if they chose, but they did not seem to be particular whether they used it or not.

We shared the soldiers' meals, listened to their stories—each one of them a full adventure, in peace time—and continued basewards, accompanied by motor ambulances in which sitting cases were carried, to a great corps collecting station, a veritable Clapham Junction of the evacuating system.

To prevent mistakes, each man's label is checked at every point he arrives at with as much care as a registered letter on its way through the post. There is no red tape, and nothing is left to chance. There is no lost time. It is never forgotten that pain is ever present and that saving time may mean saving life. But even though we have not yet come to that link in the chain—the hospital which is kept neat and burnished by the hand of a woman—all is well arranged and spotlessly clean. Many dressings were being reexamined and many wounds again attended to.

Here I saw the field operating theater nearest to the battle. It was in a spotless ten[illegible]ith a table, a powerful acetylene l[illegible], chloroform, and instruments—all [illegible]dy. Operations in the field are a rare exception in the British Army. The matter of their necessity has been discussed and re-discussed. There are arguments for and against. But Sir Arthur Sloggett, Gen. Macpherson, and the famous surgeons we have at the front, with Sir Alfred Keogh at home, may be relied upon to know their business to the tips of their fingers. In other armies, notably the Italian, urgent operations take place in what answer to our advanced dressing stations. An Italian officer said to me: "We should not do it unless we had to. Many of our cases would not stand transport from our Alpine heights."

Resuming our journey with the ambulances, we came, after an hour's halting journey through the dust and [illegible] C. convoys to a casualty clearing station—the first hospital of a kind visualized by the general public.

I have discovered from their conversation that very few people realize the intricate nature of the net spread by the R.A.M.C. over the field of war. The meshes are many—but not too many. An important part of the net are these very perfect clearing establishments. The description of two will be sufficient.

One of these clearing stations was a large old water-mill which had been transformed into a most beautiful hospital. I reached it in time to witness the arrival of the ambulances. Out of them came all manner of wounded, British and German. Friend and foe were treated alike. They were just wounded men—that was all. Such as could walk by themselves, or with the help of orderlies, came out dazed into the sunlight from the ambulances. The Germans, who had for days been trench-bound by our barrage, were, as a rule, horribly dirty and impossible to approach for physical reasons. Later, at another hospital, I saw gently born V. A. D. nurses washing great unbathed wounded Prussians and Bavarians. I felt positively guilty when I thought of the chaff with which the P. A. D. movement, its uniforms and salutings, was received ten years ago in the bad old days when we ought to have been preparing for war.

Here, in this mill casualty clearing station, the broken soldiers came for the first time under the influence and gentle touch and consoling smile of women nurses. Many of the men had been in and about the firing line for weeks, several of the Germans for longer than that. I talked with some of the enemy, who had arrived a day or two before in what must have seemed a fairy place. Some spoke of the care, kindness, good food, flowers, and music (the gramophone never stops) which were provided. As a rule they are grateful—at any rate at first. Some are very grateful. One officer used the word "lovingly" (liebvoll), and "lovingly" it must seem, for nothing is more marked in in[illegible]ting German hospitals, even such an establishment as the Rudolf Virchow

Hospital in Berlin, than to notice the roughness of the surgery, the callousness shown in making remarks before patients, and the inferiority of the undertrained nurses.

Some are not grateful and, like the pampered civilians at the Alexandra Palace, think it necessary to place on record complaints based on mere hostility.

This casualty clearing station, placid with its river, with its sunny gardens—into which many beds had been carried so that the wounded might enjoy the birds, the flowers and trees—seems like an oasis after the grim desolation of the wilderness of the Somme heights.

It is impossible to convey in words the amazing tireless activity of the nurses and doctors. I did not know that human beings could work so many hours without sleep at the most anxious kind of work the world provides. No wonder that the women sometimes break down and require hostels and rest homes. Yet during a number of war visits I have met with not one complaint from any member of any medical staff in the field or elsewhere. There is, on the other hand, the same continuous enthusiasm throughout the medical service as one sees in the great boot factory at Calais, or the vast motor repair shop in Paris, or our transport from Havre to the front. The stimulus of war seems to double the energy of every human being as soon as he lands in France.

At this great casualty clearing station by the railway the hospital trains were collecting. When we had been shown through the cool tents and had talked with men we happened to know, we went on to the newly made railway platform where the stretchers were being assembled. It was a scene almost of gayety. The gramophone was playing the inevitable "If You Were the Only Girl in the World." Jokes, cigarettes, and newspapers were passed about. The men looked the acme of content in their beautiful white train. They were willing and anxious to chat. They were interested in all that was going on, and grateful. Many might be going to "Blighty" (Britain), the paradise of the wounded man's imagination.

I do not know whether anyone has written an account of these trains, the doctors and nurses who live in them year in and year out, traveling thousands of miles in the course of a twelvemonth, but someone should do so. My own information is as yet so scanty as to be little worth reading. Of the wonderful hospital barges, too, which, whenever possible, are used on the wide French rivers and canals to carry cases that cannot stand any shaking, not enough has been said.

It was interesting at the clearing station to see evidence of the Red Cross Society in the existence of the comfortable English beds of many of the sufferers In the world of wounded all sorts of little things have an importance not understood by the generality of us. A man likes to lie in bed rather than on a stretcher not merely for the sake of custom and comfort. Such is human nature that one man feels proud of having a bed when another man has not.

On a later day I saw the arrival of one such train at one of those hospitals which look out on the sea and are situated on the northern French coast, which long before the war was recognized as a great healing place. The medical journals tell their readers in their own language of these wonderful hospitals—converted casinos and hotels and miles of perfectly equipped huts. Our hospitals in France are a world of their own. I do not know how many women and men they employ, but I should say more than 100,000. In the Etaples district alone there are 35,000 beds. Canada, Australia, New Zealand, Newfoundland, India, and the whole of the empire have given with both hands.

Those of the wounded who can be made well quickly enough—and they are, of course, the immense majority—go back to their war duties at the front, some eagerly, all without murmuring. As they lie there in these wonderful huts, in which every provision for speedy convalescence, for happiness, and reasonable amusement is afforded, tended as they are by the best surgeons and physicians of the English-speaking world, and by ladies simply and gently born, they all tell you the same story—they would like to get a glimpse of "Blighty" before going back to fight.

THE STORY OF THE UNION JACK

Touching on Britain's Naval Supremacy. Written for the Women's Patriotic Association Meeting.

By Florence Withrow, B.A.

TLL glorious is our storied "red, white and blue" and rightly gorgeous is its blazon. That it embodies the flags of England, Scotland and Ireland we all know and maybe our "wee bit" of knowledge of hagiology gives us a passing acquaintance with the Saints whose Crosses mark the banners of the three fair Kingdoms. Yet is there much to learn of the Union Jack, regarding its historic sequence and the symbolism of its colors, form, and varied cantons. A worthy emblem of our Empire's greatness is the British flag which represents before the whole world, the principles of justice, liberty and righteousness and which is honored by loyal subjects around the globe and respected by all nations of the earth.

The story of the Union Jack is a fascinating tale which begins with the adventurous experiences of England's lion-hearted Richard, a romantic figure, who with his brave Crusaders fought a gallant sea-fight off the coast of Palestine near Acre, where, supposedly, they received miraculous aid from the soldier saint George of Cappadocia, by whom the legend runs, off the same rocky shore, the dragon was slain (303 A.D.).

Richard adopted the simple device of the warrior Saint (a ruddy Greek cross upon a silver field) not only as the symbol for his Crusaders who "on their breasts a bloodie cross bore," but also as the emblem for his banner, while at the same time he chose St. George as England's patron saint.

The wearing of the cross or other symbol upon the surcoat or "jacques" (Norman-French) is probably the origin of the name Jack. This jacket (same derivation), straightcut and loose, and bearing some feudal device, was worn over a coat of mail, or sometimes it was raised on a lance or spear, serving thus as a banner whereby the King or Knight distinguished his retainers from other fighting men.

That England's flag was won upon the sea is strangely significant, for her pure red cross ever since has maintained supremacy upon the deep, as evidenced in her latest noble achievement in the stormy Skagerrack against an adroit and prepared foe. To Alfred the Great, who equipped better galleys than did the Danes, is attributed the first royal navy, likewise to him is accredited the idea of establishing naval supremacy, this policy arising from his insular Kingdom and from necessity of warding off invaders. Foolishly, Harold, the last Saxon king relaxed wise Alfred's principle, therefore he could not withstand the Norman invasion.

The supremacy of England's flag at sea was also claimed by a royal mandate of King John who proclaimed that ships of other nations must especially salute the naval Jack of England, hence gradually Portugal, Spain, Holland and Denmark conceded this honor and even accorded to England the guardianship of vessels of other nations.

England's supremacy beyond the Narrow Seas steadily grew until in 1497 the intrepid Cabot set sail from Bristol for the New World and later in Elizabeth's time Raleigh and Drake continued to extend the glories of England into the Pacific Ocean, bringing fresh lustre to the flag and no inconsiderable lucre to the Crown, while other English navigators, Frobisher and Franklin bore Britain's flag even into the frozen Arctic. Spain and Portugal were the first to hold sovereignty on the broad Atlantic but their power waned as England's waxed, consequently, in 1588 occurred the defeat of the Invincible Armada and the destruction of the "devildoms of Spain." As a sequence to this naval disaster in 1595 followed the audacious bravery of the little Revenge, which, undaunted by the immensity of the Spaniards' "high built galleons" ran sheer into the heart of the foe off Flores in the Azores." Valiant in

victory and defiant in defeat," such was the temper of this courageous craft, and with like spirit did the flag of England from Alfred to Elizabeth "brave the battle and the breeze" and become a terror to evil doers. From facts like these we begin to understand the meaning of the phrase "Britannia rules the waves."

Up to this time England's flag was simply the red cross of St. George on a white field "Argent, across gales,") but the Scottish James VI. on ascending the throne of his cousin Elizabeth created an "Additional Jack" (1606) by uniting the flags of England and of Scotland, that of the latter being the white cross of St. Andrew on a blue field, described in heraldry "azure, a Saltire argent" (on azure blue, a transverse silver cross).

The legend of St. Andrew runs that the apostle deeming himself unworthy to be crucified as was his Master, begged to be stretched on a transverse cross, just as St. Peter, with like humility, asked to be turned head downward.

The beautiful blue banner of Scotland, typical of her Lowland blue bells and Highland white heather, was nobly borne by Robert Bruce, James Douglas, William Wallace and many other heroic Scots. Victoriously it waved at Bannockburn (1314) but at Flodden (1513) alas; it piteously fell, however in border forays for long years it held the aggressive English at bay and in the struggles of the staunch Lords of the Congregation against Catholic-France its silver cross shone untarnished.

As to old Scotia's need of a navy, she had practically none, save to chase the pirates who harried her northern coasts and indeed some of her own braw clansmen turned sea-rovers and themselves harrassed English merchant ships, until Henry VIII's new navy shortened their merry plunder, hence bonny Scotland's Jack was never as sea-faring as was England's.

The "Additional Jack" of James I. although a union of the flags of the two Kingdoms was never intended to supplant them and their individual use was still decreed to distinguish at sea each realm separately. The new flag was practically a personal kingly banner with restricted use and its purpose was to signify the uniting of thrones and the allegiance of both countries to one monarch who now wished to be styled King of Great Britain, but the English opposed this as hinting at the fusion of the two Kingdoms, with Scotland paramount, which union in nowise followed, since each retained its own Parliament and likewise its natural parlying propensity one with the other.

James' Union Flag did not represent the fealty even of all his subjects, else Irin's cross would have been included, for ever since Ireland's conquest by Henry II. (1171) the kings of England had been her over lords until the Irish Parliament in Henry VIII's reign, decreeing their merald Isle a Kingdom, the sovereign of England became known as the King of Ireland also, although he displayed no Irish emblem until James I. introduced the Hibernian harp on his Royal Standard (1703).

Regarding the blazonry of the Union Flagge, of course Scots and Britons had to enjoy some "dee-ference o' Opeenion," the anxious Scotch and the eager English each wanting predominance for their own particular cross and caring naught for the heraldic design which had superimposed the red St. George upon the white St. Andrew. Consequently the heated Hielander altercated until his ruddy face heightened in hue and his sandy hair deepened in color, nevertheless he could not change the crosses, however he did get his way in reducing the English Jack's white field to the merest fimbriation or border, while the blue field of the Scotch flag remained full size. In a sense he obliterated the white field entirely, for the narrow argent border around the red cross was a technical necessity, since the strict rules of heraldry required that color be not placed upon color nor metal upon metal.

Some daring clans north of the Tweed even patterned a Union Jack after their own hearts by placing their beloved white cross smack over the English red and remnants of these brave old banners are still preserved upon their native heath in their tattered defiance, and are looked upon with pride by the clansmen as fine emblems of national dourness. As late as 1853 some acrimonious Caledonian revived this shred-bare dispute, much to the

delectation of members of both races in the British Parliament.

The Jack of James I. lasted over a century, save during the twelve years of the Commonwealth, and waved over the new British possessions in America, the West Indies, the Bermudas, Bahamas and Gibraltar. In the thirty-eighth year of its existence a restriction in use was proclaimed by Charles I., chiefly on complaint of his Admirals who wished it for their own exclusive display, hence its original purpose, that of an additional emblem of the King, was again adhered to and merchanships restored their separate aJcks. Thus the simple English red-cross flag once more flew fearlessly alone upon the High Seas.

The Commonwealth (1648) which considered the Stuart Kingdom of Scotland as no part of their State refused to fly the James I. Jack and ordered that "the red cross only on a quite white field" be used on land and sea, and on the Parliament ships instead of the Royal Standard was hoisted a new ensign, bearing St. George's cross in the dexter canton (upper corner next staff) and on a blue fly the Irish harp. Scotch vessels were forbidden to display even their Stuart arms or the English Jack and were admonished to stick to their own "blue blanket."

When Cromwell became Lord Protector and "dragooned Scotland and Ireland into submission" he put forth another Union flag which bore the cross of St. George in the first and fourth cantons, that of St. Andrew in the second and the Irish harp in the third, while in the centre he imposed a black shield with a silver lion rampant, the badge of his own family.

The Cromwell Standard was little used and short lived, for upon the Restoration of Charles II. (1660) James' Jack returned and again a royal proclamation decreed it "His Majesty's Flagge for ye speciale displaye of ye Royale Navie," accordingly the English Jack and the Red Ensign (red fly with St. George cross in dexter canton) were the flags assigned to merchantships. Therefore to this day the Red Ensign with the single red cross changed to the Union pertains to Britain's merchantmarine, while the White Ensign, the same in design save that St. George's cross quarters the entire field, as well distinguishes the Royal Navy and the Blue Ensign identical with the Red, signifies the Royal Reserve.

The sovereignty of the seas then, during many years was maintained under the red cross ensign which became the paramount marine flag of the nation. Serious challenges to its pre-eminence came from the Dutch under Von Tromp who carried a broom stick at masthead to signify that he had swept the English from the Narrow Seas but a year later the Roundhead Blake ran up a long narrow pennant to intimate that he had duly whipped the Dutchman. This then was the origin of the whip-lash pendant, although lengthy streamers had been known from the days of chivalry when at tournays and tilting matches, gay and graceful pennants floated merrily over the bright pavilions of Knights and Ladies.

Ten years after Von Tromp, De Ruyter engaged the English but was defeated and in consequence New Amsterdam was ceded to Britain and its name was changed to New York in honor of Charles II. brother. Naturally England's carrying trade enormously increased and once again was her flag especially honored in the articles of a Treaty which ran, "The ships of the United Provinces (Holland) shall strike their flag and lore their topsail to the English flag upon the High Seas, as hath been formerly observed in times past."

The Ensign Red, therefore, was the brave bunting which won final supremacy from the Dutch and established Britain's commercial greatness. To this hour it is the symbol on every sea and in every clime of British trade control and indeed during these present awful years of war what commerce would there be, were it not that Britannia rules the waves and protects even neutral shipping. Well may Uncle Sam (in cartoon) say he sees no German menace while a British man-of-war guards his rights. Only a few months ago the Teuton's skulking fleet ventured forth but instead of seriously damaging her honorable foe, as she lyingly reported, she herself was the worst "mauled" and at sight of Jellico's mighty Grand Fleet, hastened to her base.

On the joining of the Scottish Parliament with the English (1707) Queen Anne created a new Union Flagge which was proclaimed the national banner of Great Britain and her Dominions. It typified Parliamentary Union and represented a true combining of the two flags as well as of the crosses for it widened the white border of the English red cross which James had practically illiminated since he allowed only the merest fimbrication to keep color from color. James' proclamation ran "joined according to a design of our heralds" but Anne's decree read "conjoined as we see fit," regardless of heraldic technique.

On the Admiral's pennant St. George's plain red cross remained (even as today), but it was replaced by the new Union on the Red Ensign whose scope extended from merchant marine only to both Navy and Reserve. This Ensign, properly a real Jack, as the Union alone is not, and flown from the jackstaff, replaced the flags of England and Scotland which officially ceased in nautical significance. The Meteor Flag, as the new ensign was called, worthily represented not only legislative union but the noble conjoining of two high-spirited Kingdoms. This splendid banner which typified strength in unity and symbolized British justice and protection was raised by Clive in India and by Wolfe in Canada and thereby was vastly extended the sway of a now Imperial flag. West Africa and Australia subsequently accepted its unfurled glory and gained forthwith British rights and liberties.

Since then each colony has added its own particular emblem in the fly, that for the Dominion of Canada being the arms of the Provinces surrounded by a wreath of maple leaves; for New Zealand, the Southern cross; for Australia, the six-pointed star, emblematic of the six federated states in the Commonwealth. The Union alone, with the star of India in the centre, is the flag of British India and with the harp it is the badge of the Lord-Lieutenant of Ireland. For all Ministers charges d'affairs the Union bears on a shield of pretense, the British lion and Scottish unicorn supporting the Royal Standard.

Just here may be mentioned a few other interesting flags, namely, the Blue Ensign with anchor in fly for Transports; cannon and balls for Ordnance, a ship under sail for Board of Trade, an hour-glass shattered by lightning for Telegraph Department. The Lord High Admiral's flag is crimson with yellow anchor. The pilot flag is the Union with white border. Plain colored flags signify, white for truce, yellow for quarantine, red for mutiny—hoisted only twice in British Fleet, black formerly for piracy now for execution. Various meanings are denoted by the flag dipped for salute, half mast for mourning, reversed for distress, wefted or knotted for imminent danger.

To return to the evolution of the Union Jack, in George III's reign, on cessation of a separate Parliament in Ireland another flag was devised to signify still further Parliamentary union. Queen Anne displayed the Hibernian harp on her Standard but the Irish cross was not included in her flag. One might think the touchy Irish would be aggrieved at this, but sly Pat had his reasons for not going "agin" the "powers," since he had no piety to gain the cross at so great sacrifice as the loss of his own Parliament. However this loss duly came (1801) and by it the Irish Jack (argent, a saltire gules, on white a red Saltire cross) was added to the Union, making a triune flag. All honor to its noble bearing and to the loyal homage it has won from the Irish people who have not been without cause for disaffection.

As to the so-called cross of St. Patrick, properly this saint had none since he was not a martyr, hence its origin is attributed to the Labarum of Constantine, the first Christian Emperor, who bore as Standard the monogram of the first two letters X R of the Greek name of Christ. If the Irish adoption of Constantine's cross be true peculiar import attaches also to the harp of the pagan goddess Hibernia which the Emperor's father chose as his emblem, after accomplishing the pacification of Ibernia (301). (In Mr. Barlow Cumberland's excellent volume on the Union Jack, to which I am indebted for the plan of this article, he humorously hints that Britons added their "H's" then as now.)

natural instinct. The mind is not made to live in a world of monotomy. Life is a thing of lights and shadows, and a shadow that never lifts, is the prelude of stagnation and death. Satisfy the instinct for change, for joy, for growth, and you cut at the roots of alcoholism. The redistribution of wealth which the war entails will work in this direction and its working will be helped by the external restrictions at present placed upon the liquor traffic. The mere physical and social benefit which accrues from enforced abstinence for a time is so great that most persons who think at all will prefer to continue to enjoy that benefit rather than return to the old order of things with all its misery and evil. It has been said that "you cannot make men sober by Act of Parliament." The saying is smart but largely false. Drinking depends on two factors, the desire and the opportunity, and very often the opportunity excites the desire. Minimize the opportunities to drink, supply other objects of desire, and you go a long way in enabling men and women to achieve sobriety and with the elimination of alcoholism will go hand in hand the diminution of insanity. Of course, there is the danger of reaction after the war is over. Lecky, the historian, has observed that after most of the great wars of history there were periods of great luxury, possibly as a reaction against the hardships of war. Admitting this to be true, we may well ask whether it is necessary for us to repeat the follies of the past. To be forewarned is to be forearmed. The need of our time is a mobilization of all the forces that make for betterment—humanitarian, ethical, social, and religious—to help the nation to make permanent the lessons learned in loss and sorrow.

There are solid grounds for hope that especially, though not exclusively, among women we shall witness a great diminution in those neurotic disorders that form part of the general problem of mental abnormality. Thousands of men who have gone or are preparing to go to the front have all their lifetime been subject to the bondage of neurasthenic weakness and incapacity, or of psychasthenic fears, or of hypochondriacal fancies. They have never known what it is to live. But at their country's call they have flung from off them the spell of ancient inhibitions and long-established impracticalities and have gone forth to face wounds and death. Only when summoned to a possible surrender of life have they learned how wonderful life really is. The physical regime under which these men are compelled to live, reinforcing the inspiration born of an appeal to the unselfish instincts, can have nothing but the best effects on those subjected to its discipline.

When we turn to the workers at home we find that women of every class and rank have been caught up by the spirit of the sacrifice and are consecrating all their energies to help in the cause of the nation. They are nursing the wounded, or are busy making shells and other projectiles, or are at work on farms, assuming burdens formerly supposed to be fitted only for masculine shoulders, or are industriously raising funds to relieve the victims of distress and need. Especially significant is the change coming over the minds of the women of the middle classes. These sheltered daughters of the merchant or the professional man, victims of mid-Victorian traditions of gentility, are now falling into line with their sisters of the upper and humbler social ranks, and are discovering that life is something greater than the latest novel from Mudie's or a game of tennis, or even the tepid gossip of a church sewing society. Idleness and ennui have lost their hold, healthy and unselfish activity is now the prevailing fashion.

The war has enfranchised women. It has set them free from the benumbing conventionalities that threatened to stifle their psychic energies, and so far it has contributed to soundness of mind and nerve. Among the mighty sociological forces which the present world-conflict has set in motion, not least will be the new value set upon all sorts of good work and the new dignity which will crown the worker. With the ever-widening circle of woman's interests, a new barrier against mental disorder has been erected.

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"Wouldn't you like another piece of cake, dear?" asked the hostess.

"Yes, Iowuld," replied George, dubiously, "and I guess I could chew it, but I couldn't swallow it."

Sensitive.

Jessie—Please, aunties, the new lady next door says, her compliments, and will you play very low, because her husband is extremely musical.—Sydney Bulletin.

The Acid Test.

He—So you think she is broad-minded.

She—I know she is. Why, she is broad-minded enough to admit that she is narrow-minded!

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Mrs. Newmarrie (sorrowfully, after departure of her husband's rich uncle)—It's too bad the dinner was a failure, dear.

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"Yes?"

"Then we filters it—"

"Yes?"

"—Then we drinks beer."

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